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Indiana Michigan Power
One Cook Place
Bridgman, MI 49106
IndianaMichiganPower.com

April 1, 2008

AEP:NRC:2573-43
10 CFR 50.73

Docket No. 50-315

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 1
LICENSEE EVENT REPORT 315/2008-001-00
UNIT 1 MANUAL REACTOR TRIP

In accordance with the criteria established by 10 CFR 50.73, Licensee Event Report System, the following report is being submitted:

LER 315/2008-001-00: "Unit 1 Manual Reactor Trip."

There are no commitments contained in this submittal.

Should you have any questions, please contact Mr. James M. Petro, Jr., Regulatory Affairs Manager, at (269) 466-2491.

Sincerely,

Mark A. Peifer
Site Vice President

JEN/rdw

Attachment

IE22
NRR

c: J. L. Caldwell – NRC Region III
K. D. Curry – AEP Ft. Wayne, w/o attachment
INPO Records Center
J. T. King – MPSC, w/o attachment
MDEQ – WHMD/RPS, w/o attachment
NRC Resident Inspector
P. S. Tam – NRC Washington DC

NRC Form 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

Unit 1 Manual Reactor Trip due to Main Turbine Vibrations

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
02	02	2008	2008	-- 001 --	00	04	01	2008	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

93 %

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
James M. Petro, Jr., Regulatory Affairs Manager	(269) 466-2491

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
	YES (If Yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On February 2, 2008, at 0530 hours, Donald C. Cook Nuclear Plant Unit 1 operators initiated a manual reactor trip from 93% power when main turbine bearing vibration reached the manual trip setpoint. All control rods fully inserted and the Auxiliary Feedwater System (AFW) started and performed as designed. The reactor trip was uncomplicated and all major plant components functioned as designed. The reactor trip and AFW actuations were reported in accordance with 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A) respectively, and are reportable as a Licensee Event Report in accordance with 10 CFR 50.73(a)(2)(iv)(A).

An unintentional cooldown of Main Turbine Lube Oil (MTLO) induced an oil whip condition that exacerbated main turbine bearing vibrations. After raising MTLO temperature, operators were performing a power reduction in an attempt to lower main turbine vibration. During the power reduction, vibration levels reached the manual trip setpoint and operators manually tripped the reactor in accordance with plant procedures. Corrective actions included installation of main turbine balance weights to return vibration to normal levels as well as actions to address the MTLO cooldown.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form (366A)*

Conditions Prior to Event

The reactor was at 93% power with a power reduction in progress in response to rising main turbine vibrations.

Description of Event

On February 2, 2008, at 0530 hours, Donald C. Cook Nuclear Plant Unit 1 operators initiated a manual reactor trip from 93% power due to main turbine high vibrations reaching the manual trip setpoint. All control rods fully inserted and the Auxiliary Feedwater System (AFW) [BA] started automatically and performed as designed. The electrical buses transferred normally to Reserve Feed and bus voltage was maintained as required.

The main turbine was operating with elevated bearing vibration levels of approximately 8.5 mils. This vibration level is acceptable for continued operation and is below the high vibration annunciator setpoint. The setpoint value varies and is field set (typically 2 mils above the nominal observed value for each bearing). Both operating Non-Essential Service Water [KG] (NESW) pumps' strainers automatically backwashed at the same time resulting in a lower NESW header pressure which caused an automatic start of the two standby NESW pumps. A lake temperature drop, combined with the auto-starts of the two standby NESW pumps while Main Turbine Lube Oil [LL] (MTLO) temperature control was in manual (the temperature control valve was not functioning in automatic control), resulted in an unintentional cooldown of MTLO. This MTLO cooldown contributed to oil whirl/whip and rising bearing vibration. Bearing vibration increased from 8.5 mils to 10.5 mils over a 2-hour period. Operators took appropriate actions in accordance with plant procedures to warm MTLO, within the normal band, from 111 degrees to 115 degrees. This had no effect on vibration. The crew commenced lowering power level from 100% in an attempt to lower vibration. At 93% power vibration levels increased to the manual trip setpoint of 13.8 mils and the operators performed a manual reactor trip

The reactor trip was uncomplicated and all major plant components functioned as designed. The reactor trip was reported in accordance with 10 CFR 50.72(b)(2)(iv)(B) and the AFW actuation was reported in accordance with 10 CFR 50.72(b)(3)(iv)(A). The reactor trip and AFW actuations are reportable as a Licensee Event Report (LER) in accordance with 10 CFR 50.73(a)(2)(iv)(A).

Cause of Event

An unintentional cooldown of Main Turbine Lube Oil (MTLO) induced an oil whip condition that exacerbated main turbine bearing vibrations.

Contributing causes were 1) the non-functioning oil temperature control valve which contributed to an oil temperature excursion and 2) bearings 5 and 6 being loaded more lightly than the other bearings.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form (366A)*

Analysis of Event

Review of pertinent control room logs and post-trip review documentation indicate that:

No risk significant plant equipment was unavailable at the time of the unit trip, or failed following the trip,

All reactor and secondary plant equipment functioned as designed without challenging plant safety,

Plant electrical buses remained energized by offsite electrical power following the trip, and,

Operator actions were appropriate in responding to the elevated main turbine vibration, executing actions to trip the unit, and monitoring and controlling the post-trip plant response.

Thus, the manually initiated unit trip resulted in no significant risk to the plant or surrounding population.

Corrective Actions

Balance weights were added to the main turbine rotor to return vibration to normal levels.

Actions to repair the oil temperature control valve are in the station work control process.

Operations has instituted a compensatory measure to run three NESW pumps in order to enhance NESW system stability and provide operating margin from a NESW pump auto-start due to low header pressure. This compensatory measure shall remain in place until additional corrective actions to address system stability are completed.

Actions are in the station work control process to adjust NESW pump setpoints for automatic start on low pressure and strainer backwash to set them differently between units in order to minimize the potential for simultaneous automatic starts.

Evaluation of critical data testing of the main turbine which was performed during a subsequent shutdown (refueling) is being performed. Following this evaluation, additional actions will be initiated as appropriate, including revision of the causal analysis if necessary.

LICENSEE EVENT REPORT (LER)

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form (366A)*

Previous Similar Events

The following LERs identify reactor trip events in the past three years. The causes of these reactor trips were not similar in nature to the cause of this trip.

05000316/2005-001-00 Reactor Trip from RCP Bus Undervoltage Signal Complicated by Diesel Generator Output Breaker Failure

05000315/2007-001-00 Reactor trip from low Steam Generator water level coincident with a steam flow - feedwater flow mismatch